MI FluFocus

Influenza Surveillance Updates
Bureaus of Epidemiology and Laboratories

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Current Influenza Activity Levels:

- **Michigan:** No activity
- **United States:** Reporting has concluded for the 2009-2010 influenza season

Updates of Interest:

- **Michigan:** Two travel-related influenza A (H3) cases were identified during the previous week (see Laboratory section for more details)

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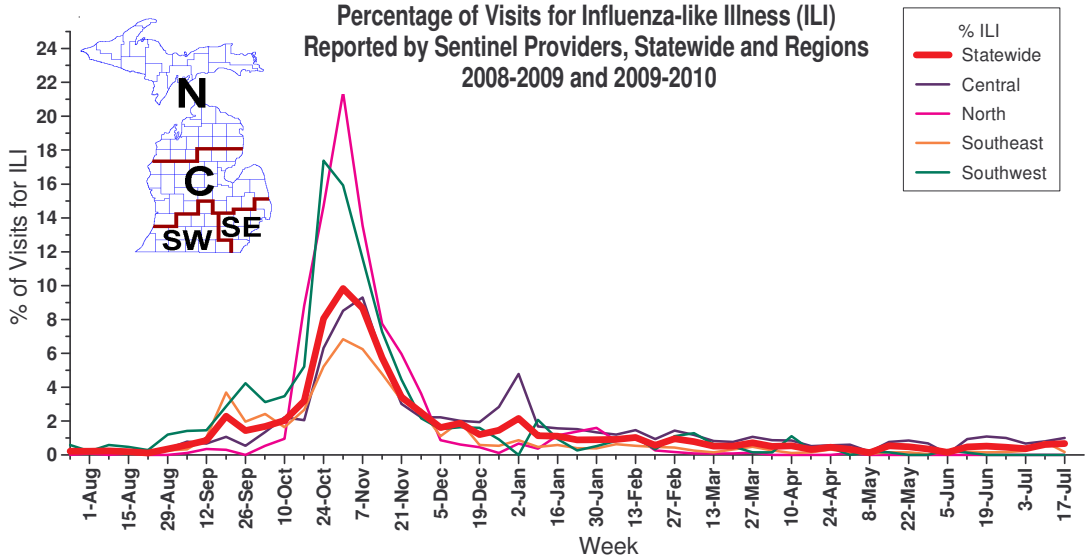
Influenza Surveillance Reports

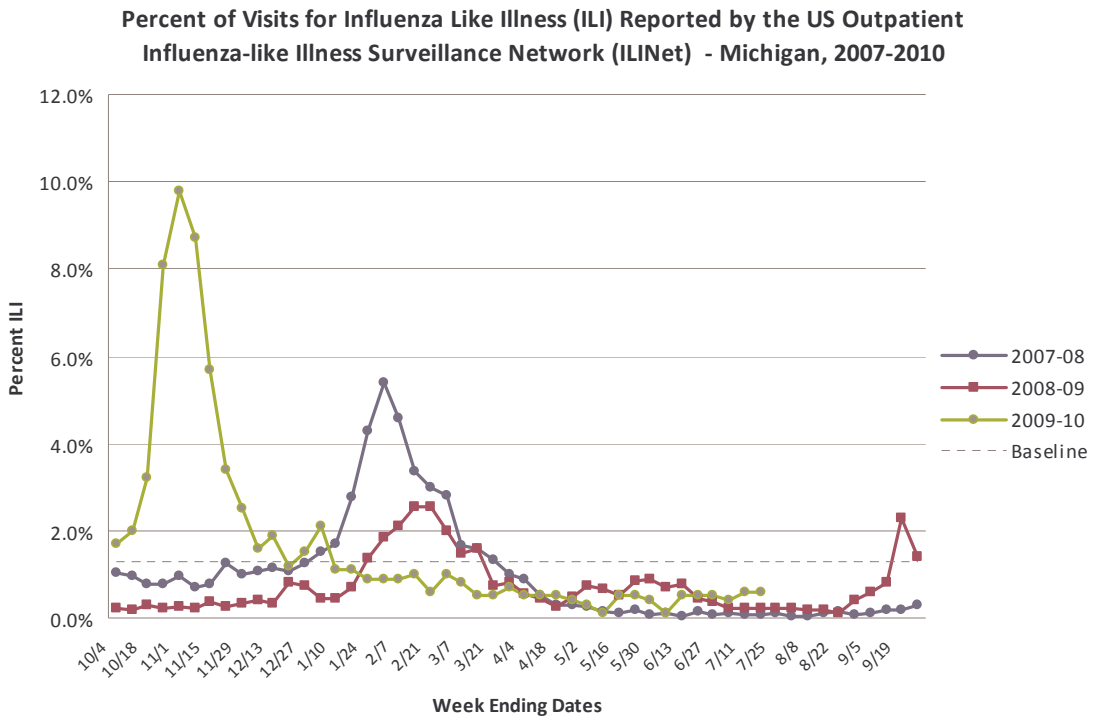
Michigan Disease Surveillance System: MDSS data for the week ending July 10th indicated that aggregate influenza case reports remained at baseline summer levels. Individual reports, including influenza and 2009 novel influenza cases, remained near the previous week's reported levels of little to no activity. Aggregate influenza cases are similar to levels seen during the same reporting period in 2009, while individual influenza reports are slightly lower.

Emergency Department Surveillance: Emergency department visits from constitutional complaints remained steady during the previous week, while respiratory complaints decreased slightly. Respiratory complaints have slowly but steadily declined since late February. Both constitutional and respiratory complaints are at similar levels compared to the same time last year. In the past week, there were three constitutional alerts in the N(2) and SW (1) Influenza Surveillance Regions and no respiratory alerts.

Over-the-Counter Product Surveillance: Over the past week, OTC product sales of cough/cold aides, thermometers and chest rubs remained similar to last week's levels, while sales of children's electrolytes decreased slightly. All indicators are consistent with levels seen at this time last year, except for chest rubs, which are slightly increased, and cough/cold aides, which are moderately increased.

Sentinel Provider Surveillance (as of July 22): During the week ending July 17, 2010, the proportion of visits due to influenza-like illness (ILI) slightly increased to 0.7% overall. Thirty-five patient visits due to ILI were reported out of 5,274 office visits. Nineteen sentinel sites provided data for this report. Activity slightly increased in one surveillance region: Central (1.0%); decreased in one region: Southeast (0.2%); and no ILI activity was reported in the remaining two regions: Southwest and North. Please note that these rates may change as additional reports are received.





As part of pandemic influenza surveillance, CDC and MDCH highly encourage year-round participation from all sentinel providers. New practices are encouraged to join the sentinel surveillance program today! Contact Cristi Carlton at 517-335-9104 or CarltonC2@michigan.gov for more information.

Laboratory Surveillance (as of July 17): During July 11-17, one influenza A (H3) isolate was identified at the MDCH Bureau of Laboratories. This specimen came from a Southeast Michigan resident who had recent travel history to China and most likely acquired infection while traveling there. For the 2009-2010 season (starting on October 4, 2009), MDCH BOL has identified 611 influenza isolates:

- 2009 Influenza A (H1N1): 609
- Influenza A (H3): 1
- Influenza B: 1

One additional influenza A (H3) case in a Michigan resident (SE Region) was reported to MDCH during the past week by an outside state health department; this case has a travel history outside of Michigan and is not thought to have contracted influenza within Michigan.

Eight sentinel laboratories reported for the week ending July 17, 2010. All laboratories (SE, SW, C, N) reported no influenza A or B positive test results, with very few specimens being tested. One lab in the SW Region reported one positive parainfluenza result and one positive adenovirus result.

Michigan Influenza Antigenic Characterization (as of July 22): One 2009 H1N1 influenza A virus from Michigan has undergone further characterization at the CDC. This virus was characterized as A/California/07/2009 (H1N1)-like, which is the recommended strain for the H1 component of the 2010-11 Northern Hemisphere vaccine.

Michigan Influenza Antiviral Resistance Data (as of July 22): MDCH has received 33 results for antiviral resistance testing for the 2009-2010 season. All of the specimens tested were pandemic 2009 influenza A (H1N1) viruses. Of these results, one virus did show resistance to oseltamivir. This virus was obtained in November 2009 from a 3 year old child with an underlying immunosuppressive condition from the SE Region and had a multiple courses of oseltamivir prior to specimen collection. Further epidemiologic investigation is ongoing. The 33 specimens tested were distributed as follows: 8 Southeast, 8 Southwest, 9 Central, 2 North, 6 unknown.

Antiviral resistance testing takes months to complete and cannot be used to guide individual patient treatment. However, CDC has made recommendations regarding the use of antivirals for treatment and prophylaxis of influenza. The guidance is available at http://www.cdc.gov/H1N1flu/recommendations.htm.

Influenza-Associated Pediatric Mortality (as of July 22): Five 2009 H1N1 influenza-associated pediatric mortalities (SE(3), SW, N) have been reported to MDCH for the 2009-2010 influenza season.

***CDC has asked states for information on any pediatric death associated with influenza. This includes not only any pediatric death (<18 years) resulting from a compatible illness with laboratory confirmation of influenza, but also any unexplained pediatric death with evidence of an infectious process. Please immediately call MDCH to ensure proper specimens are obtained. View the complete MDCH protocol online at http://www.michigan.gov/documents/mdch/ME_pediatric_influenza_guidance_v2_214270_7.pdf.

Influenza Congregate Settings Outbreaks (as of July 22): Seven congregate setting outbreaks with confirmatory novel influenza A H1N1 testing (2SE, 3 SW, 1C, 1N), and three outbreaks associated with positive influenza A tests (2C, 1N) have been reported to MDCH for the 2009-2010 influenza season. These are 8 school facilities and 2 long term care facilities. Human metapneumovirus was confirmed in one outbreak in a long term care facility (SW) in February. Adenovirus was confirmed from one outbreak in an elementary school (SW) in May.

During fall 2009, 567 influenza-related school and/or district closures in Michigan (Public Health Preparedness Region 1 - 55, Region 2N - 4, Region 2S – 8, Region 3 - 54, Region 5 - 153, Region 6 - 100, Region 7 - 109, Region 8 - 84) were reported.

National: To access previous Center for Disease Control and Prevention weekly surveillance reports, visit http://www.cdc.gov/flu/weekly/fluactivity.htm.

International (WHO Pandemic Update 109 [edited], July 16): Worldwide, overall pandemic influenza activity remains low. The most active areas of pandemic influenza virus transmission currently are in parts of South Asia, West Africa, and Central America. In the temperate zone of the southern hemisphere, pandemic and seasonal influenza activity has remained low during the first half of the southern hemisphere winter, except in South Africa, where increased detections of primarily seasonal influenza viruses (type B and H3N2) were reported during late June and early July 2010. Seasonal influenza H3N2 viruses continue to circulate at varying levels across parts of the Americas, Africa, and Southeast Asia. Increased seasonal influenza activity continues to be observed in several countries of Central America.

To date, most countries of the temperate zone of the southern hemisphere, with the exception of South Africa, have reported low overall levels of respiratory disease activity and low to sporadic levels of pandemic and seasonal influenza virus circulation during the first half of the southern hemisphere winter season. Pandemic influenza viruses have been detected only sporadically or at low levels in most of these countries. As reported last week, South Africa began observing a sharp increase in the proportion of sentinel respiratory samples testing positive for influenza virus (primarily seasonal influenza B and H3N2) during late June 2010, reaching a peak of ~50% detection rate during the first week of July 2010, and falling to ~40% during the second week of July 2010. In Chile (as of late June 2010) and Argentina (as of early July 2010), the most recent available data show that influenza activity remains sporadic in Argentina and low in Chile (~5% respiratory samples tested positive for influenza, 84% of which were pandemic virus with small numbers of seasonal influenza H3N2 and type B detected as well). In both Chile and Argentina, RSV has been the predominant circulating respiratory virus since mid-April 2010. In Australia, as of the last week of June 2010, overall rates of ILI remained low and below levels observed during the same period in past three winter seasons. Although a small cluster of pandemic influenza cases, including a few hospitalized cases, were recently detected in the Northern Territory of Australia, pandemic and seasonal influenza virus detections remain otherwise sporadic, albeit slightly increased during late June and early July 2010. Similarly, in New Zealand, rates of ILI have remained low and below the seasonal baseline, with only sporadic detections of pandemic and seasonal H3N2 viruses through the first week of July 2010. In both Australia and New Zealand, current levels of ILI are similar to those observed during the same period in 2008, when the influenza season was noted to have arrived and peaked late in winter.

In Asia, overall pandemic influenza activity remains low to sporadic, except in parts of southern and western India, Malaysia, and Singapore. As reported last week, in India, transmission of pandemic influenza virus remains active but stable in the southern state of Kerala. The extent of illness in the community is currently being assessed and monitored by the Government of India. Similar numbers of new cases, including small numbers of fatal cases, have been reported on a weekly basis since transmission first increased during mid-June 2010. Recent, small increases in pandemic influenza virus circulation have also been observed since mid-June 2010 in other southern and western states of India, particularly in the western state of Maharashtra. In Singapore, levels of ARI increased during the first two weeks of July 2010; however, the intensity of pandemic influenza virus transmission has declined during June and July 2010 after peaking in May 2010. The proportion of patients with ILI testing positive for pandemic influenza virus in Singapore remained stable (14-16%) during first two weeks of July 2010. In

addition, substantial co-circulation of seasonal influenza H3N2 viruses (with pandemic H1N1 virus) was detected in Singapore throughout May and June 2010. In Malaysia, numbers of new cases of pandemic influenza continued to decline; overall pandemic influenza activity fell substantially in June and early July 2010 after peaking during mid-April to mid-May 2010. Low levels of seasonal influenza type B viruses (and to much lesser extent pandemic influenza virus) continue to circulate across northern and southern China as levels of ILI remain stable and near seasonal levels seen in the same period in recent years. Low levels of pandemic and seasonal influenza (H3N2 and type B) viruses also continued to circulate in Hong Kong SAR (China), Chinese Taipei, and parts of Thailand.

In the tropical regions of the Americas, overall pandemic and seasonal influenza activity remained low, except in parts of Central and South America, where there has been recent active co-circulation of pandemic and seasonal influenza H3N2 viruses. The majority of recent active transmission of pandemic influenza virus has been reported in Colombia, Costa Rica, and to a lesser extent in Cuba. In Colombia, although low level circulation of pandemic influenza viruses has persisted throughout the first half 2010, a second period of active transmission began in mid-May 2010, peaked in June 2010, has now largely subsided during the second of week of July 2010. Similarly, in Costa Rica, low level circulation of pandemic virus has persisted throughout 2010, however, there has been a recent resurgence in active transmission (though less intense than the initial 2009 wave) of pandemic influenza virus during June 2010. As reported previously, in Panama, a sharp increase in the circulation influenza A viruses (particularly H3N2, but also small numbers of pandemic H1N1) was reported over the month of June 2010; a high intensity of respiratory diseases and a moderate impact on healthcare services continued to be reported during the second week of July 2010. In Nicaragua, recent active transmission of seasonal influenza H3N2 viruses, which began during late May 2010 and peaked during mid June 2010, appears to have largely subsided during recent weeks. Many countries in the region continue to report ongoing co-circulation of other respiratory viruses, most notably RSV.

In sub-Saharan Africa, the current situation is largely unchanged since the last update. Pandemic and seasonal influenza activity continues to be observed in several countries. Ghana, in West Africa, continued to have a sustained resurgence in circulation of pandemic influenza virus during June 2010, more than several months after the first period of pandemic activity peaked (early April 2010). Seasonal influenza type B viruses continue to circulate in parts of central and southern Africa, particularly in Cameroon, where an increase in influenza type B virus circulation was observed during June 2010. Small numbers of seasonal H3N2 viruses continue to be detected across Africa, particularly in eastern and southern Africa; the most recent detections have been reported in Kenya and South Africa.

Overall, in the temperate regions of the northern hemisphere (North America and Europe), pandemic and seasonal influenza viruses have been detected only sporadically or at very low levels during the past month.

Weekly reporting of influenza activity to the CDC has concluded for the 2009-2010 season.

For additional flu vaccination and education information, the MDCH *FluBytes* newsletter is available at http://www.michigan.gov/mdch/0,1607,7-132-2940_2955_22779_40563-125027--,00.html.

Novel Influenza Activity and Other News

WHO Pandemic Phase: Phase 6 – characterized by increased and sustained transmission in the general population. Human to human transmission of an animal or human-animal influenza reassortant virus has caused sustained community level outbreaks in at least two WHO regions.

International, Human (WHO, July 22): The Ministry of Health of Indonesia has announced a new case of human infection of H5N1 avian influenza. A 13-year-old female from Sukoharjo District, Central Java Province developed symptoms on 16 June, was hospitalized on 21 June and died on 24 June. Laboratory tests were positive for H5N1 virus infection. Investigations into the source of her infection indicate poultry deaths, in the neighbourhood, one week before onset of case's symptoms.

Of the 167 cases confirmed to date in Indonesia, 138 have been fatal.

International, Vaccine (The Ottawa Citizen, July 20): Nearly one million cases of H1N1 and 52 deaths due to human swine flu were prevented in Ontario alone by the controversial mass immunization campaign, according to new Canadian research.

The study is believed to be the first to investigate the cost-effectiveness of the largest immunization program in the country's history.

Overall, the researchers estimated that the H1N1 flu shots prevented 420 hospitalizations, 28,000 visits to hospital emergency departments and 100,000 visits to a doctor's office in Ontario, even though the vaccines were only rolled out in late October -- nine weeks into the fall wave.

"The vaccine was implemented quite late -- at the height of the pandemic -- and it takes about two weeks for the vaccine to take effect. Even then we could save enough patients to make it worthwhile," Beate Sander, a University of Toronto doctoral student and health economist, said.

As of April, 428 H1N1 deaths had been reported in Canada -- 128 of them in Ontario -- and nearly 9,000 hospitalizations. A total of 1,843 of the hospitalizations occurred in Ontario.

The fall wave of the first flu pandemic in 41 years began in the first week of September, peaked in early November and tapered off by late January.

Ontario's $180-million mass immunization program began Oct. 26 -- two weeks before the peak. More than one-third (37 per cent) of the population had been vaccinated 16 weeks into the outbreak, and almost half (45 per cent) were vaccinated by the end of the outbreak, according to data that was available at the time of the study.

Other estimates suggest the final coverage rate was lower, about 36 per cent, but Sander says it would have no major bearing on their findings, because most of the benefit had been accrued by week 16.

"When the program was rolled out, there was so much negative press about how expensive it is, what a waste of money it is," Sander said. "We wanted to look at it in a more objective way."

The researchers knew from Ontario data how many people were hospitalized, how many people died and how many ended up in an intensive-care unit. They used a simulation model to predict how the pandemic might have unfolded if the mass immunization program had never happened. The model predicted the attack rate -- meaning the proportion of people in the entire population who would get sick -- to estimate the number of cases across the province.

The researchers predicted that without a mass flu vaccine program, 4.1 million cases of flu would have occurred in Ontario.

Reporting in the journal, Vaccine, the Toronto team estimated the campaign prevented about 900,000 case of flu, 105,080 visits to doctors, 28,721 emergency visits, 427 hospitalizations and 52 deaths, and saved an estimated $20 million in health costs.

Immunization came too late to significantly alter the course of the pandemic, and a further delay of a few weeks "would have eroded the program's cost-effectiveness considerably," Sander said.

The shots were not without risks: as of March 6, 25 million doses of the vaccine had been distributed across the nation. As of the same time, a total of 6,518 adverse reactions had been reported by the provinces and territories; 269 were considered serious. There were 134 cases of anaphylaxis, a severe allergic reaction, among the serious cases. Nineteen deaths have been reported to date and are under investigation, according to the Public Health Agency of Canada's most recent vaccine surveillance report. The government says the rate of serious reactions -- 1.1 per 100,000 doses -- was in the normal range.

Michigan Wild Bird Surveillance (USDA, as of July 22): For the 2010 season (April 1, 2010-March 31, 2011), highly pathogenic avian influenza H5N1 has not been recovered from 4,576 samples tested nationwide, including 15 Michigan samples (5 live bird, 2 hunter-killed birds, 8 morbidity/mortality). For more information, visit the National HPAI Early Detection Data System at http://wildlifedisease.nbii.gov/ai/.

To learn about avian influenza surveillance in Michigan wild birds or to report dead waterfowl, go to Michigan’s Emerging Disease website at http://www.michigan.gov/emergingdiseases.

International Poultry and Wild Bird Surveillance (OIE): Reports of avian influenza activity, including summary graphs of avian influenza H5N1 outbreaks in poultry, can be found at the following website: http://www.oie.int/downld/AVIAN%20INFLUENZA/A_AI-Asia.htm.

For questions or to be added to the distribution list, please contact Susan Peters at PetersS1@michigan.gov

Contributors

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Table 1. H5N1 Influenza in Humans - Cases up to July 22, 2010. http://www.who.int/csr/disease/avian_influenza/country/cases_table_2010_07_22/en/index.html. Downloaded 7/22/2010. Cumulative number of lab-confirmed cases reported to WHO. Total cases includes deaths.

Country	2003		2004		2005		2006		2007		2008		2009		2010		Total	
	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths
Azerbaijan	0	0	0	0	0	0	8	5	0	0	0	0	0	0	0	0	8	5
Bangladesh	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
Cambodia	0	0	0	0	4	4	2	2	1	1	1	0	1	0	1	1	10	8
China	1	1	0	0	8	5	13	8	5	3	4	4	7	4	1	1	39	26
Djibouti	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
Egypt	0	0	0	0	0	0	18	10	25	9	8	4	39	4	19	7	109	34
Indonesia	0	0	0	0	20	13	55	45	42	37	24	20	21	19	5	4	167	138
Iraq	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0	0	3	2
Lao People's Democratic Republic	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	2	2
Myanmar	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Nigeria	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1
Pakistan	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	3	1
Thailand	0	0	17	12	5	2	3	3	0	0	0	0	0	0	0	0	25	17
Turkey	0	0	0	0	0	0	12	4	0	0	0	0	0	0	0	0	12	4
Viet Nam	3	3	29	20	61	19	0	0	8	5	6	5	5	5	7	2	119	59
Total	4	4	46	32	98	43	115	79	88	59	44	33	73	32	33	15	501	297